

## SEQUENCE LISTING

110 · Daiichi Pharmaceutical Co., Ltd.

120 · Mutant animals

130 · 98291M

150 · JP P1998-002191

151 · 1998-01-08

160 · 17

210 · 1

211 · 467

212 · PRT

213 · Human

400 · 1

Met Thr Glu Leu Pro Ala Pro Leu Ser Tyr Phe Gln Asn Ala Gln 15

Met Ser Glu Asp Asn His Leu Ser Asn Thr Val Arg Ser Gln Asn 30

Asp Asn Arg Glu Arg Gln Glu His Asn Asp Arg Arg Ser Leu Gly 45

His Pro Glu Pro Leu Ser Asn Gly Arg Pro Gln Gly Asn Ser Arg 60

Gln Val Val Glu Gln Asp Glu Glu Glu Asp Glu Glu Leu Thr Leu 75

Lys Tyr Gly Ala Lys His Val Ile Met Leu Phe Val Pro Val Thr 90

Leu Cys Met Val Val Val Val Ala Thr Ile Lys Ser Val Ser Phe 105

Tyr Thr Arg Lys Asp Gly Gln Leu Ile Tyr Thr Pro Phe Thr Glu 120

Asp Thr Glu Thr Val Gly Gln Arg Ala Leu His Ser Ile Leu Asn 135

Ala Ala Ile Met Ile Ser Val Ile Val Val Met Thr Ile Leu Leu 150

Val Val Leu Tyr Lys Tyr Arg Cys Tyr Lys Val Ile His Ala Trp 165

Leu Ile Ile Ser Ser Leu Leu Leu Leu Phe Phe Phe Ser Phe Ile 180

Tyr Leu Gly Glu Val Phe Lys Thr Tyr Asn Val Ala Val Asp Tyr 195

Ile Thr Val Ala Leu Leu Ile Trp Asn Phe Gly Val Val Gly Met 210

Ile Ser Ile His Trp Lys Gly Pro Leu Arg Leu Gln Gln Ala Tyr 225  
Leu Ile Met Ile Ser Ala Leu Met Ala Leu Val Phe Ile Lys Tyr 240  
Leu Pro Glu Trp Thr Ala Trp Leu Ile Leu Ala Val Ile Ser Val 255  
Tyr Asp Leu Val Ala Val Leu Cys Pro Lys Gly Pro Leu Arg Met 270  
Leu Val Glu Thr Ala Gln Glu Arg Asn Glu Thr Leu Phe Pro Ala 285  
Leu Ile Tyr Ser Ser Thr Met Val Trp Leu Val Asn Met Ala Glu 300  
Gly Asp Pro Glu Ala Gln Arg Arg Val Ser Lys Asn Ser Lys Tyr 315  
Asn Ala Glu Ser Thr Glu Arg Glu Ser Gln Asp Thr Val Ala Glu 330  
Asn Asp Asp Gly Gly Phe Ser Glu Glu Trp Glu Ala Gln Arg Asp 345  
Ser His Leu Gly Pro His Arg Ser Thr Pro Glu Ser Arg Ala Ala 360  
Val Gln Glu Leu Ser Ser Ser Ile Leu Ala Gly Glu Asp Pro Glu 375  
Glu Arg Gly Val Lys Leu Gly Leu Gly Asp Phe Ile Phe Tyr Ser 390  
Val Leu Val Gly Lys Ala Ser Ala Thr Ala Ser Gly Asp Trp Asn 405  
Thr Thr Ile Ala Cys Phe Val Ala Ile Leu Ile Gly Leu Cys Leu 420  
Thr Leu Leu Leu Leu Ala Ile Phe Lys Lys Ala Leu Pro Ala Leu 435  
Pro Ile Ser Ile Thr Phe Gly Leu Val Phe Tyr Phe Ala Thr Asp 450  
Tyr Leu Val Gln Pro Phe Met Asp Gln Leu Ala Phe His Gln Phe 465  
Tyr Ile 467

<210> 2

<211> 1404

<212> DNA

<213> Human

<400> 2

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gac aat aga gaa cgg cag gag cac aac gac aga cgg agc ett ggc 135  
cac cct gag cca tta tct aat gga cga ccc cag ggt aac tcc cgg 180  
cag gtg gtg gag caa gat gag gaa gaa gat gag gag ctg aca ttg 225  
aaa tat ggc gcc aag cat gtg atc atg ctc ttt gtc cct gtg act 270  
ctc tgc atg gtg gtg gtc gtg get acc att aag tca gtc agc ttt 315  
tat acc cgg aag gat ggg cag cta atc tat acc cca ttc aca gaa 360  
gat acc gag act gtg ggc cag aga gcc ctg cac tca att ctg aat 405  
get gcc atc atg atc agt gtc att gtt gtc atg act atc ctc ctg 450  
gtg gtt ctg tat aaa tac agg tgc tat aag gtc atc cat gcc tgg 495  
ctt att ata tca tct cta ttg ttg ctg ttc ttt ttt tca ttc att 540  
tac ttg ggg gaa gtg ttt aaa acc tat aac gtt get gtg gac tac 585  
att act gtt gca ctc ctg atc tgg aat ttt ggt gtg gtg gga atg 630  
att tcc att cac tgg aaa ggt cca ett cga ctc cag cag gca tat 675  
ctc att atg att agt gcc ctc atg gcc ctg gtg ttt atc aag tac 720  
ctc cct gaa tgg act gcg tgg ctc atc ttg get gtg att tca gta 765  
tat gat tta gtg get gtt ttg tgt ccg aaa ggt cca ett cgt atg 810  
ctg gtt gaa aca get cag gag aga aat gaa acg ett ttt cca get 855

ctc att tac tcc tca aca atg gtg tgg ttg gtg aat atg gca gaa 900  
 gga gac ccg gaa gct caa agg aga gta tcc aaa aat tcc aag tat 945  
 aat gca gaa agc aca gaa agg gag tca caa gac act gtt gca gag 990  
 aat gat gat ggc ggg ttc agt gag gaa tgg gaa gcc cag agg gac 1035  
 agt cat cta ggg cct cat cgc tct aca cct gag tca cga gct gct 1080  
 gtc cag gaa ctt tcc agc agt atc ctc gct ggt gaa gac cca gag 1125  
 gaa agg gga gta aaa ctt gga ttg gga gat ttc att ttc tac agt 1170  
 gtt ctg gtt ggt aaa gcc tca gca aca gcc agt gga gac tgg aac 1215  
 aca acc ata gcc tgt ttc gta gcc ata tta att ggt ttg tgc ctt 1260  
 aca tta tta ctc ctt gcc att ttc aag aaa gca ttg cca gct ctt 1305  
 cca atc tcc atc acc ttt ggg ctt gtt ttc tac ttt gcc aca gat 1350  
 tat ctt gta cag cct ttt atg gac caa tta gca ttc cat caa ttt 1395  
 tat atc tag 1404

210 3

211 467

212 PRT

213 Mouse

400 3

Met Thr Glu Ile Pro Ala Pro Leu Ser Tyr Phe Gln Asn Ala Gln 15

Met Ser Glu Asp Ser His Ser Ser Ser Ala Ile Arg Ser Gln Asn 30

Asp Ser Gln Glu Arg Gln Gln Gln His Asp Arg Gln Arg Leu Asp 45

Asn Pro Glu Pro Ile Ser Asn Gly Arg Pro Gln Ser Asn Ser Arg 60

Gln Val Val Glu Gln Asp Glu Glu Glu Asp Glu Glu Leu Thr Leu 75

Lys Tyr Gly Ala Lys His Val Ile Met Leu Phe Val Pro Val Thr 90  
Leu Cys Met Val Val Val Val Ala Thr Ile Lys Ser Val Ser Phe 105  
Tyr Thr Arg Lys Asp Gly Gln Leu Ile Tyr Thr Pro Phe Thr Glu 120  
Asp Thr Glu Thr Val Gly Gln Arg Ala Leu His Ser Ile Leu Asn 135  
Ala Ala Ile Met Ile Ser Val Ile Val Ile Met Thr Ile Leu Leu 150  
Val Val Leu Tyr Lys Tyr Arg Cys Tyr Lys Val Ile His Ala Trp 165  
Leu Ile Ile Ser Ser Leu Leu Leu Leu Phe Phe Phe Ser Phe Ile 180  
Tyr Leu Gly Glu Val Phe Lys Thr Tyr Asn Val Ala Val Asp Tyr 195  
Val Thr Val Ala Leu Leu Ile Trp Asn Phe Gly Val Val Gly Met 210  
Ile Ala Ile His Trp Lys Gly Pro Leu Arg Leu Gln Gln Ala Tyr 225  
Leu Ile Met Ile Ser Ala Leu Met Ala Leu Val Phe Ile Lys Tyr 240  
Leu Pro Glu Trp Thr Ala Trp Leu Ile Leu Ala Val Ile Ser Val 255  
Tyr Asp Leu Val Ala Val Leu Cys Pro Lys Gly Pro Leu Arg Met 270  
Leu Val Glu Thr Ala Gln Glu Arg Asn Glu Thr Leu Phe Pro Ala 285  
Leu Ile Tyr Ser Ser Thr Met Val Trp Leu Val Asn Met Ala Glu 300  
Gly Asp Pro Glu Ala Gln Arg Arg Val Pro Lys Asn Pro Lys Tyr 315  
Asn Thr Gln Arg Ala Glu Arg Glu Thr Gln Asp Ser Gly Ser Gly 330  
Asn Asp Asp Gly Gly Phe Ser Glu Glu Trp Glu Ala Gln Arg Asp 345  
Ser His Leu Gly Pro His Arg Ser Thr Pro Glu Ser Arg Ala Ala 360  
Val Gln Glu Leu Ser Gly Ser Ile Leu Thr Ser Glu Asp Pro Glu 375

Glu Arg Gly Val Lys Leu Gly Leu Gly Asp Phe Ile Phe Tyr Ser 390  
 Val Leu Val Gly Lys Ala Ser Ala Thr Ala Ser Gly Asp Trp Asn 405  
 Thr Thr Ile Ala Cys Phe Val Ala Ile Leu Ile Gly Leu Cys Leu 420  
 Thr Leu Leu Leu Leu Ala Ile Phe Lys Lys Ala Leu Pro Ala Leu 435  
 Pro Ile Ser Ile Thr Phe Gly Leu Val Phe Tyr Phe Ala Thr Asp 450  
 Tyr Leu Val Gln Pro Phe Met Asp Gln Leu Ala Phe His Gln Phe 465  
 Tyr Ile 467

210 · 4

211 · 1404

212 · DNA

213 · Mouse

400 · 4

atg aca gag ata cct gca cct ttg tcc tac ttc cag aat gcc cag 45  
 atg tct gag gac agc cac tcc agc agc gcc atc cgg agc cag aat 90  
 gac agc caa gaa cgg cag cag cag cat gac agg cag aga ctt gac 135  
 aac cct gag cca ata tct aat ggg cgg ccc cag agt aac tca aga 180  
 cag gtg gtg gaa caa gat gag gag gaa gac gaa gag ctg aca ttg 225  
 aaa tat gga gcc aag cat gtc atc atg etc ttt gtc ccc gtg acc 270  
 etc tgc atg gtc gtc gtc gtg gcc acc atc aaa tca gtc agc ttc 315  
 tat acc cgg aag gac ggt cag cta atc tac acc cca ttc aca gaa 360  
 gac act gag act gta ggc caa aga gcc ctg cac teg atc ctg aat 405  
 gcg gcc atc atg atc agt gtc att gtc att atg acc atc etc ctg 450

gtg gtc ctg tat aaa tac agg tgc tac aag gtc atc cac gcc tgg 495  
 ctt att att tca tct ctg ttg ttg ctg ttc ttt ttt tgc ttc att 540  
 tac tta ggg gaa gta ttt aag acc tac aat gtc gcc gtg gac tac 585  
 gtt aca gta gca ctc cta atc tgg aat ttt ggt gtg gtc ggg atg 630  
 att gcc atc cac tgg aaa ggc ccc ctt cga ctg cag cag gcg tat 675  
 ctc att atg atc agt gcc ctc atg gcc ctg gta ttt atc aag tac 720  
 ctc ccc gaa tgg acc gca tgg ctc atc ttg gct gtg att tca gta 765  
 tat gat ttg gtg gct gtt tta tgt ccc aaa ggc cca ctt cgt atg 810  
 ctg gtt gaa aca gct cag gaa aga aat gag act ctc ttt cca gct 855  
 ctt atc tat tcc tca aca atg gtg tgg ttg gtg aat atg gct gaa 900  
 gga gac cca gaa gcc caa agg agg gta ccc aag aac ccc aag tat 945  
 aac aca caa aga gcg gag aga gag aca cag gac agt ggt tct ggg 990  
 aac gat gat ggt ggc ttc agt gag gag tgg gag gcc caa aga gac 1035  
 agt cac ctg ggg cct cat cgc tcc act ccc gag tca aga gct gct 1080  
 gtc cag gaa ctt tct ggg agc att cta acg agt gaa gac ccg gag 1125  
 gaa aga gga gta aaa ctt gga ctg gga gat ttc att ttc tac agt 1170  
 gtt ctg gtt ggt aag gcc tca gca acc gcc agt gga gac tgg aac 1215  
 aca acc ata gcc tgc ttt gta gcc ata ctg atc ggc ctg tgc ctt 1260  
 aca tta ctc ctg ctc gcc att ttc aag aaa gcg ttg cca gcc ctc 1305  
 ccc atc tcc atc acc ttc ggg ctc gtg ttc tac ttc gcc acg gat 1350

tac ctt gtg cag ccc ttc atg gac caa ctt gca ttc cat cag ttt 1395

tat atc tag 1404

210 · 5

211 · 25

212 · DNA

213 · Artificial Sequence

400 · 5

ggaattttgg tgtggtcggg atgat

210 · 6

211 · 23

212 · DNA

213 · Artificial Sequence

400 · 6

ggteccattcg gggaggtact tga

210 · 7

211 · 36

212 · DNA

213 · Artificial Sequence

400 · 7

tgtggtcggg atgategcca cccactggaa aggccc

210 · 8

211 · 36

212 · DNA

213 · Artificial Sequence

400 · 8

aggctttcc agtgggtggc gatcattccg accaca

210 · 9

211 · 18

212 · DNA

213 · Artificial Sequence

400 · 9

tctagaaggc cgtctaga

210 · 10



211 · 18  
212 · DNA  
213 · Artificial Sequence  
400 · 10

agatctgccg gcagatct

210 · 11  
211 · 30  
212 · DNA  
213 · Artificial Sequence  
400 · 11

cccaactcta tttctaccct cgttcactctg

210 · 12  
211 · 30  
212 · DNA  
213 · Artificial Sequence  
400 · 12

tagtgagacg tgctacttcc atttgtcacg

210 · 13  
211 · 30  
212 · DNA  
213 · Artificial Sequence  
400 · 13

tgctggagga aaatgtgtta tttaagagca

210 · 14  
211 · 30  
212 · DNA  
213 · Artificial Sequence  
400 · 14

tactgaaatc acagccaaga tgagccatgc

210 · 15  
211 · 30  
212 · DNA  
213 · Artificial Sequence  
400 · 15

ggtcacatcc agcttcacac agacaagtct

210 · 16

211 · 30

212 · DNA

213 · Artificial Sequence

400 · 16

tactgaaatc acagccaaga tgagccatgc

210 · 17

211 · 30

212 · DNA

213 · Artificial Sequence

400 · 17

tagtgagacg tgctacttcc atttgtcacg